

INTERNET POVERTY INDEX LAUNCH WEBINAR

Which are the most Internet
poor countries in the world?

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[Host]

Good afternoon. Good morning, everyone. Thank you for joining us today during the launch of the Internet poverty index. Shayna, I would be very happy to turn it over to you to get us started on today's webinar.

Shayna Robinson

Great. Thank you. Hello everyone. My name is Shayna Robinson and I'm a Program Officer with the Internet Society Foundation. It's a pleasure to be here at the launch of the World Data Labs Internet Poverty Index.

We are all very familiar with the sustainable development goals and in particular SDG 1, which calls for no poverty. Internet access plays an important role in reducing global poverty by providing a multitude of opportunities for low income people around the world, including jobs, access to information, increased educational opportunities and more. Research you will hear about today will connect these two concepts of global poverty and Internet poverty, and share

how we can define, measure and reduce Internet poverty, while ensuring that more people continue to gain Internet access.

I will first take the opportunity before we start, as your moderator, to introduce today's speakers. Sarah Armstrong, who's the Executive Director of the Internet Society Foundation. Dr. Homi Kharas, co-founder and Senior Economic Advisor at World Data Lab, Dr. Katharina Fenz, Senior Data Scientist at World Data Lab, Professor Jesus Crespo Cuaresma from Vienna University of Economic and Business, and Ravi Shankar Chatuverdi, who is a lecturer in global business and the Director of Research, and a doctoral research fellow for innovation and change at the Fletcher Institute for Business in the Global Context at Tufts University.

To kick us off, I will now ask Sarah Armstrong, the executive director of the Internet Society Foundation to share some opening remarks. So, over to you, Sarah.

Sarah Armstrong

Thank you very much, Shayna, and hello, everyone. I am thrilled to be part of this event today. This is just something about which we are so excited and proud. I think I have maybe one of the most amazing jobs in the world, that I get to lead organization, and, as importantly, an incredible team of people, to make sure every single day that the Internet is making a positive difference in the lives of people around the world. At the Internet Society Foundation, we see the Internet as a global technical infrastructure, a resource to improve people's lives, and a force for good in society. It is that to which we are dedicated every single hour of every single day.

Our vision, the Internet is for everyone. We work very closely to find as many ways as possible to improve access, and studies like the World Data Lab's study is something that has taught us a lot that we can work with. So, we're thrilled to be part of this event.

As you all know, the pandemic continues. 20 and 21 were tough years, and unfortunately 2022 continues. So, the Internet is more important now than ever. It's got to be enduring. It's got to be reliable. It's got to be resilient. It has to be a lifeline for many -- it is a lifeline for many, and we need to make sure that people have access to it. And yet there are still countless unconnected people, and this is something that we are going to work to change for as long as we possibly can.

In line with our vision of the Internet is for everyone, we have three areas in our funding portfolio. One is to increase access, one is to promote digital inclusion, and one, of course, is research, and that's why we're here today, because of having funded this study, this amazing work. We are really excited to be part of the World Data Labs family and all the work that they've done on this concept

of Internet poverty. You know, if you can't measure it, you can't improve it, and what they've done here is measured it.

It builds on all of this work that's already been done on poverty measurement, but it adds a new lens, a specific assessment of Internet poverty, something about which we all need to be more familiar. So, there have been a lot of exciting insights, and you're going to hear a really cool presentation that I think you'll enjoy quite a bit, followed by an amazing discussion.

I will share one finding, just to mention quickly, and then of course we'll move into the real program here. But, we learned that better quality of an Internet connection does not have to cost more, even in richer countries. This is something that could very well enhance policymaking and enhance Internet access globally.

I'd like to conclude by saying to everyone that this kind of work is so important, and the Internet Society Foundation remains committed to continuing to fund work like this, the work that will help to move the world out of poverty through accessing and benefiting from the Internet. Thank you. And back to you, Shayna.

Shayna Robinson

Thanks so much for those wonderful words Sarah. And now I'll turn it over to the team at World Data Lab who will take us through the research and the wonderful things that they were able to put together through this study.

Jesus Crespo Cuaresma

Thank you very much, Shayna. Thanks, Sarah for the very nice introductory words. Let me start by introducing the World Data Lab. The World Data Lab is a data enterprise advancing data democratisation. It has created a series of products already that track progress towards the sustainable development goals in real time. The World Poverty Clock, the Water Scarcity Clock, or the World Hunger Clock, are examples on which the Internet Poverty Index now builds upon. As well we have developed granular estimates of spending and the size of the middle class across space, and across very granular demographic characteristics, between age, sex, or education levels.

In this particular project, we faced the problem of providing a consistent definition of Internet poverty and of developing a methodology that enables us to measure Internet poverty worldwide in a consistent manner. For that we developed a concept of Minimum Internet Needs, that links to the World Bank's definition of extreme poverty. The concept of extreme poverty on its own, built

upon the definition of minimum needs to survive, especially related to food, to shelter to clothing, and also on the concept of purchasing power parities, that allowed us to compare these costs of basic needs, across time and space.

The concept of Internet poverty now expands this traditional method of poverty measurement by defining a minimum Internet basket which combines consistent measures of quantity, quality, and affordability of Internet services. In this respect, we are actually building upon a strong foundation of quantitative research that establishes benchmarks on Internet services, while adding new perspectives that concern the affordability of Internet worldwide. The insights gained from our analysis should also provide hints about how policy can support strategies to reduce Internet poverty in the present and in the future.

Under our definition of Internet poverty a person is considered to be Internet poor if he or she cannot afford the minimum quantity and a minimum quality of Internet services without spending more than 10% of their disposable income on receiving these services. Needless to say, there's an potentially arbitrary nature to the definition in terms of quantity and quality, so we we reviewed the literature on Internet poverty in very much depth in order to get reasonable thresholds concerning both affordability on one side, and quantity and quality on the other side.

We decided to go for a minimum of 10% of total personal expenditures on the affordability side. That has of course an interesting link to Internet prices, competition in terms of Internet services, but could also be particularly insightful for the designing policy measures. On the side of the quantity, we decided for 1 gigabyte monthly data only mobile broadband, that allows for around 40 minutes a day of connection. On the quality side, we went for 10 megabits per second download speed, that should also allow to use the basic Internet services.

How is the method that creates the Internet poverty numbers actually implemented? Well, what we did was to collect data on Internet prices, on Internet quality, on technical infrastructure, demographic and economic characteristics, at the country level, in order to create a large data set on which we could use then machine learning methods to obtain estimates of the price of this minimal Internet package in a way that would be comparable across countries of the world, in a perfect manner. These Internet prices that have been estimated, and that are therefore based on the quantity and quality definition, which is comparable across countries of the world, are then confronted with estimates of the distribution of spending across individuals in all countries of the world, in order to obtain the Internet Poverty Index, which measures the share of people who cannot afford this minimal Internet package use in less than 10% of their spending.

Needless to say the Internet poverty threshold can be adjusted in a similar fashion as the existing efforts to calculate extreme poverty numbers based on other thresholds, different from the \$1.90 a day, instead \$3.20 a day, or \$5.50 a day, the same way one can adjust within this methodological framework, the quantity, quality, or affordability parameters of the Internet Poverty Index. As such, we have a very flexible methodological framework that can also be used to expand the indicator farther in the future.

Once we compute these numbers for the whole world, what do we find? What do we see in the data? For that I'm going to pass over to Kathy, who I'm sure can give you very detailed insights into the Internet Poverty Index all over the world.

Katharina Fenz

Thank you, Jesus. As you just said, I would like to now share a few key insights with you on how many people are living in poverty, and also which regions are affected the most by Internet poverty around the world.

We found that around 1.4 billion people in the world cannot afford this minimum package of mobile Internet. This is equivalent to around 18% of the total world's population. Most of these people in Internet poverty tend to live in Africa and in Asia, and we can see that around 709 million live in Africa currently, and around 457 million live in Asia.

To get a better picture of Internet poverty, it makes sense to also relate it to income poverty, and compare these two parameters, and what are the differences. Income poverty is a \$1.90 per day threshold, basically. Here we can clearly see that there are much more people living in Internet poverty than are income poverty. Actually, it's around twice as many people globally. This is just based on the fact that someone who has a bit more than \$1.90 per day cannot necessarily already afford a package of mobile Internet, so this makes sense in this respect. A similarity that we can see here is that the total numbers are the highest in both parameters in Africa, and then second place, Asia, clearly.

This picture changes quite a bit when we now look at the shares of people in Internet poverty and income poverty, as opposed to the absolute numbers. Here we can see that actually, Asia seems to be doing particularly well with Internet poverty, as compared to income poverty. For example, you can see that Asia has around the same share of population in income poverty as the Americas, but only about half of the share of people in Internet poverty, only 10%, which may still be a lot of people as we saw in the absolute numbers, but it still means that in Asia, 9 out of 10

persons can at least afford this minimum package, who can be connected to the Internet. So, even people with lower incomes have a chance to be connected here.

When we zoom into the country level, we can again have a look at the countries with the highest shares of people in Internet poverty. We can see that, unfortunately, there's still quite a few countries where over 90% of the population cannot afford this minimum package of mobile Internet. We see that Burundi leads the list here, but it's also really closely followed, for example, by Madagascar, by Guinea Bissau, but also by Venezuela, so it's not just the focus on Africa.

The picture turns away from Africa even more if we look at the absolute numbers of people in Internet poverty. There are two countries that have absolute numbers of people in Internet poverty above 100 million persons. We have Nigeria on top, but also India and China follow quite closely. In this top 10 list we have countries of all over the world, we have Africa, we have Asia, we have South America, which indicates already that Internet poverty is not just an issue in Africa, or in the very poorest countries of the world, but, in absolute numbers at least, it's an issue all around the world. This leads to the question, What we can do about it? How can we reduce Internet poverty effectively?

We have two different possibilities to try and reduce Internet poverty. The first one is to make people become richer, of course. Increasing wealth and disposable income works more or less along the lines of decreasing Internet poverty. We can target that by, for example, increasing economic growth, international development, and especially also by trying to reduce inequality, so that especially the poorest persons can benefit the most from these actions. The other way to reduce Internet poverty is to reduce the Internet prices. While it's, of course, really important to work on decreasing poverty overall, when we look at Internet poverty, reducing the prices seems to be a much faster potential way to actually get more people connected.

Countries can, for example, work on reducing Internet prices by implementing tax reductions, or also by setting up market regulations, making sure that the market population works well. This also includes for example, increasing competition, or they can use benchmark countries, that have already decreased Internet prices quite successfully -- we have a few of these -- to see which strategies they have applied, and then use them to also bring their prices down.

This gets us to the distribution of prices, of this minimum package that Jesus has described, around the world. We have now grouped all the countries of the world into four price groups, cheap, affordable, medium, and expensive, by how much this package costs. He has also grouped

them by continent. You can now see which continents tend to have a lot of countries that have rather cheap Internet, and which tend to have rather expensive Internet.

In the first column with the cheapest Internet, we have a lot of Asian countries. It's quite dominated by Asian countries. We also have a few European and also African countries here, but Africa is leaving this column clearly. In the second one where we still have affordable prices, we can see a lot of African countries and also many European countries here, and a few American countries, although most American countries tend to be towards the upper end of the scale, and have rather higher Internet prices.

We also looked not just at the prices, but also at how they relate to income or wealth in these countries. Interestingly, there's no clear pattern that rich countries would have higher or lower prices, so we can find actually all combinations here. We have poor countries with low prices, poor countries with high prices, and the other way round, also rich countries with high prices and with low prices.

A few examples to mention are developing countries that have somehow still achieved to be in this group of below \$5 per month for this very minimum package, India, for example, Tunisia, Bangladesh, or [inaudible], so we have quite a few countries actually that have achieved this already, and that also allows their population with lower incomes to be connected.

Finally, now that we know a bit about the prices, and how much they might actually affect Internet poverty, we can play a little what if game. In the first column, you see the baseline, current numbers. In Asia, we currently have 457 million people in Internet poverty. On the global level, it's 1.4 billion, and in Africa, it's 709 million.

Now, we can have a look at what would happen if every country in the world has the price level of this minimum package like Kenya, and this is what you see in the second column here. While in Africa, this would actually decrease Internet poverty a bit, because Kenya has prices that are below the African average, we can see that, in Asia, this will go totally into the other direction. In Asia, we would have an increase in Internet poverty with these alternative prices. On the global level, we would see only a rather small change, we would have 7 million more people in Internet poverty.

Another alternative scenario could be to have prices like India all over the world, and here we would see that this would decrease prices almost everywhere. We would have lower Internet poverty in Africa, lower Internet poverty in Asia, and also on the global level, we would have quite

a big decrease in the number of people in Internet poverty. So, Internet poverty with these alternative prices could be cut almost by half.

Though this gives a very good outlook that this can be achieved, unfortunately, in the past few years, we have only seen rather small price reductions in reality. On the global level, we can see prices go down currently by around 1.5% per year only, but I think that these benchmark prices, that are already available in some countries, could show the possibility to how we can actually reduce prices in more countries, and bring Internet poverty down on the global level. If this could be achieved, we could then start to think not only about how we can get more people connected, but maybe rather how we can really make the best use of increased connectivity around the world.

With this, I want to now hand over to Shayna again, who will now introduce two experts in the field who will also share their thoughts on the topic.

Shayna Robinson

Thank you so much, Katrina and Jesus, for giving us that wonderful presentation on the research and the study that you conducted. Again, I want to draw everyone's attention to the chat so feel free to engage in conversations and questions. We will open it up after, at the end of this, to explore some of these really great questions that are happening in the chat, so feel free to engage there.

But now I want to introduce Dr. Homi Kharas and Ravi Shankar Chaturvedi, who will just respond a bit to what the World Data Lab team has presented. First, I guess, I'll ask Dr. Kharas to give us a few words.

Homi Kharas

Thank you so much. Shayna, and thanks for this great presentation. I wanted to just start by relating this to the Sustainable Development Goals. If we think about the Sustainable Development Goals, obviously, access to the Internet affects almost all of the goals, whether it's poverty, education, equality, health, you name it, it really does affect most of the goals, but there are a few where I think it is particularly important.

SDG 8 talks about decent work and economic growth. The fact that all of us are on this call demonstrates that, for many of us, our work requires having access to the Internet, but probably the Sustainable Development Goal that is most pertinent to Internet access is SDG 9, which talks about improved infrastructure. They're divided up into different targets, these goals, so there's a

target which is called a 9(c), and I just wanted to read that out. It says, Strive to provide universal and affordable access to the Internet by 2020, in least developed countries

These goals were set in 2015. We've missed the 2020 deadline by a very wide margin, but I think that wording is important because it has the two basic principles that we've been talking about. It's universal access, and it's affordable access. That's really the heart of this. If you don't have enough money to actually buy mobile Internet services, then you can have potential access, but you don't really have true access in the sense that it can be used to really build out your economic opportunities. Conversely, if you have the money, but you don't have the infrastructure, then you also don't have that opportunity. So, it's this combination of having the infrastructure and affordability that I find to be really powerful. Thank you.

Shayna Robinson

Wonderful, thank you. Ravi, would you like to respond?

Ravi Shankar Chatuverdi

Thank you very much, and for a terrific presentation, and for having us here today.

I was particularly struck by the very provocative what if comparisons of how state of Internet poverty around the world, if the world were to adopt India's pricing. it's remarkable. I thought we should probably both credit India for its tremendous achievement in terms of closing the Internet poverty gap, just going by your own numbers. I think your number said roughly about 100 million or less in India live in absolute Internet poverty which, if you look at the overall population of the country, is about under 10%. It's remarkable, on the one hand.

On the other hand, however, I think it's important to think about beyond access aspects of solving for Internet poverty. Joanne Robinson, the famous Cambridge economist, said the frustrating thing about India is that whatever you can say rightly about India, the exact opposite is also true. In terms of size as measured by the number of Internet users, India has a give or take in excess of over 600 million active Internet users. There is still a lot of headroom for growth, given that there's about 100 million who are yet to see any meaningful access to the Internet. It's also the second largest Internet market behind China. India's basic Internet users, by some recent information and data I've been looking at, their mobile broadband consumption is about three times the size of that of mobile phone users in the United States.

Now, while, on the one hand, all this advancement and closure, if you will, of the Internet poverty gap has resulted in Indians becoming data rich before they become economically rich, there is a

bit of a rub - and I'm also thinking about the what next for this terrific work that this team has put together -- which is to think through how all this digital consumption facilitated by lowering barriers to access can result in meaningful economic activity. As the Internet becomes central to the way societies buy, sell, or dwell, work, play and pay, the conventional wisdom is that digital consumption will create thriving economies, but the data in India shows that most digital consumption is in what is called a 'time pass' economy, or consumption of Bollywood clips and cricket games and so on and so forth. India's yet to get to a place where all this digital activity and this digital access results in inclusive economic growth in a meaningful way, and that is something that we need to think about.

Shayna Robinson

That's a really wonderful point, and I wondered if Dr. Kharas, you could just respond to the to the idea around Internet access necessarily translating to meaningful and economic development, and this idea that maybe that doesn't always correlate. Have any thoughts on that?

Homi Kharas

Well, of course, like many things, it's very difficult to say what is going to really cause rapid economic growth. When one when one looks at Asia, and it's really interesting to me to see how different regions in the world have adopted different policies that have led to quite radically different Internet prices. When one looks at Asia, and you look at all of the so called Asian unicorns, these are companies that are going public with initial valuations of over a billion dollars, they're all in the digital space. When you look at E-commerce, and you look at the way in which people are now engaging in economic activity, e-commerce is far and away the most rapidly growing segment of the economies in Southeast Asia, in North Asia. It definitely offers the potential, but, in many places, there's a big gap between potential and what actually gets done.

We do have to worry a lot about the way in which these kinds of technologies can generate monopolies that ultimately stifle economic growth. We've clearly seen major concerns about that in the way in which, in China, new regulations have started to be applied to digital firms. This is not a technology that can just be simply left to develop organically on its own. As Ravi said, If one were to do that, the potential and the opportunities can be frittered away. On the other hand, I think if properly regulated and properly directed, we've seen in lots of places that it can be a hugely positive thing for economic growth.

Just one final word on this. When we look at the way in which really poor people have developed, and the way in which their incomes have risen, it's almost always by having them connect to larger markets. The reason why poor people in rural areas are often so poor, is because the only person

that they can sell their surplus to is some middleman that comes, and there's only one middleman, it's a monopoly. The profits, the value added, all gets taken by that middleman. What digital technologies do is they connect many of these poor people to larger markets, and they squeeze out the middleman, and they leave much more of the value added in the hands of the producer. That's the really big opportunity for many of the poorest people in the world who are still living in rural areas.

Shayna Robinson

That's a wonderful thought. I just want to give Ravi a few more moments to respond, and to give us any closing remarks.

Ravi Shankar Chatuverdi

I've been violently nodding my head in agreement to everything that Homi said. He touched on a couple of issues that I thought I could potentially add to. He talked about a well regulated telecom marketplace as being extremely crucial to sustainable means of reducing access poverty. Again, since you highlighted Kenya and India, I want to touch upon India again, given that India remains the beacon in some sense, be it because of the India [inaudible], and the everyday low telecom prices that seem to be going lower with every passing day. It seems, in many ways, a best practice to hold up to the world.

I would urge an element of caution there. We should probably be a little more cautious about upholding India as a bit of a best practice, especially when it comes to telecom pricing. While the first round of reforms in the late 90s have ushered in a tremendously competitive telecoms marketplace in India, subsequently, at least since 2016, ever since JIO entered the marketplace, what you're seeing is a pretty bizarre situation where the prices are going down, and it is also leading to several players in the market exiting. And that bodes ill.

We also need to kind of think about a much more comprehensive view of what is the price the country, or the consumers, are paying for those low prices? There is, in more ways than one, regulatory capture happening. What's happening in India is large parts of the economy facilitated by this digital access, is captured by a few players and primarily by the JIO enterprise, and that's worrisome.

We need to think about pricing, not just in terms of lowering barriers to access, but in a much more comprehensive way, and thinking about all the downstream impacts and implications of how well regulated are several aspects of the digital economy, that this lowering of access barriers is fostering. That is key to everything that Homi said, which is, our journey towards realizing the

SDGs comes from competitive, well regulated, marketplaces and spaces that go all the way from the telecom sector to every digital platform that enables all kinds of digitally enabled commerce activity.

Shayna Robinson

Wonderful. Well, thank you so much, and I appreciate so much the really complex thinking and ideas and strategies that we're engaging with as a result of this study.

I want to now to shift to an open q&a, and there's been a few questions in the chat, and, again, the questions for any of the folks who have who have chatted today, but I thought maybe just to kick off, to give the World Data Lab Team an opportunity to just talk a little bit more about where they were able to find some of the data that they use to build the index, and to speak a bit more specifically about some of the methodology, that Wolfgang so graciously is responding to in the chat.

Jesus Crespo Cuaresma

Maybe I can start, at least bring some insights into a couple of the questions that were that were raised. One of them concerned the fact that that the Internet poverty concept, of course, relies on the existence of access to Internet. That was one of the points that was raised. In principle, that is right, at least in the conceptual setting in which we have presented it. However, potential obstacles to access are going to also reflect themselves in in Internet prices themselves. So, they are they are to a certain extent already embodied in our estimates of the price of a minimum package that would be required to consider somebody as connected.

So, to the extent that accessibility issues and the infrastructure problems affect Internet prices, we have it embodied into the index. Of course, for the narrative of the index, we are assuming that everybody could access Internet, and then it's a matter of the affordability side, which was, in our case, based on some empirical evidence for Sub Saharan Africa. We set the affordability threshold to 10%. That's also something that was discussed in the chat.

In principle, one could change that without any problem. As I said, the good thing about the methodological framework is that it's very flexible. We believe that that is the most reasonable, realistic framework in which to talk about real accessibility, as opposed to the to imposing there something that would be more of a target expenditure threshold, like those that you find that in the policy discussions related to these 2%. In our research, we have been comparing different types of thresholds, different types of minimum of minimum Internet packages, and we believe

that the one that we have chosen reflects the more intuitive understanding that we have of what Internet poverty actually means in the world.

I can pass it over to Kathy, maybe she has something to add.

Katharina Fenz

Thank you. Maybe adding to the point that you just made also with different thresholds and goals, still we can add something to the discussion, but it doesn't necessarily mean that this would replace other goals or thresholds that have been out there. Of course, we have also looked into this 2% GNI threshold, and compared our index and our ranking to the ranking that we get if we set prices in relation to what share of the GNI per capita would they take. We get set very similar rankings, actually, with our ranking, and with this kind of ranking. So, which makes sense, we use both the Internet prices, and the share of people who can afford it, depending on the wealth and also on the GNIs per country.

Our index also adds, in the sense that we can see what share exactly of the population can now afford mobile Internet, and not just yes/no, are they all reached or not? So, we can break it down a bit, and we can also see the number of people who are not able to afford this Internet yet.

We'll be adding to this, and it's fair to say we use, for example, the World Bank's paper, and also survey data on West Africa, to set this threshold, to see how many people can afford mobile Internet in the countries with the lowest shares of people who can afford it, combine this with the spending distributions, and then set a reasonable threshold.

Shayna Robinson

Great, thank you. And I wonder to Ravi, based on that these thresholds and sort of what people do once they are online, and the argument that a lot of time is spent in these sort of passive ways. What do you think is there are their strategies or ideas or thoughts that you have about how to encourage or support the sort of economic activities that can take place online, that can actually help or impact folks' abilities to participate in markets?

Ravi Shankar Chatuverdi

Shayna, that's a terrific question. Again, I'm only talking about India, because we've highlighted it as, in some sense, an exemplar of everyday low data and mobile broadband prices. The progress that India's experienced in digital inclusion has not, in any meaningful way, processed into inclusion in the form of economic opportunities. The pandemic has kind of laid bare the tremendous amount of disparities within the economy. To be sure, this dichotomy is not unique

to India, it is true of large swaths of the digital south, of the global south, and they all have faced the same inclusion paradox.

I guess the point I'm making here is that solving for access poverty is a necessary but not a sufficient condition to get to realizing the SDGs. There are several other things that need to be in place, and there needs to be other aspects and policies that need to be in place for digital uptake to truly be a lever for building economic momentum and job growth. We've done this work specifically looking at India, and what it would take for India to take advantage of its tremendous digital momentum, as we call it in our digital evolution scorecard, and this tremendous advancement in digital inclusion and progress that India has made, and what it needs to do to translate that into economic growth.

Ravi Shankar Chatuverdi

A couple of things. One, there needs to be a focus at every level on digital skills, and the lack of digital skills and dexterity, there are several gaps there. So, once we provide access, we also need to think through creating pathways to digital skills and dexterity. That is the other big gap where there needs to be a lot of thinking and a lot of work, and a lot of policy focus, to be able to translate all this digital inclusion momentum into economic growth of it.

Shayna Robinson

Wonderful, and I think that really highlights how, at the Internet Society Foundation, our programs are structured, and our focus on building digital skills. Not just about connectivity and access, but also once you get on there, what do you do, and how do you navigate that, and how do you use that as a force for change and transformation in your life in a good way? So, I completely agree.

There's also a question about Internet shutdowns, and whether or not Internet shutdowns factor into this index at all, because, of course, if a government or a nation is not allowing you to access the Internet, well then that probably could be considered a factor in Internet poverty. Perhaps Jesus has a response to that?

Jesus Crespo Cuaresma

Unfortunately, the question is excellent. That's something probably that would be part of future research in this direction. I would not see a way in which it can be integrated into the index as it stands right now, beyond, of course, the potential effect it has through the variables that enter the machine learning exercise in order to create comparable prices across countries. That would go a little bit more into the direction of expanding the concept of Internet poverty beyond those three dimensions that we looked at, of affordability, quality and quantity, into something like

institutional access, or something more related to political freedom, even, to a certain extent. I see it much more as a call for further research than as something that could be easily implemented in the current conceptual framework.

Shayna Robinson

Yes, Ravi.

Ravi Shankar Chatuverdi

I'm tempted to add to that, and again, with apologies to anybody dialing in from India, I'm not beating up on India as much as it is, we need to take the India exemplar with a bit of a grain of salt and innocence. I started my commentary with a quote from Joanne Robinson, let me extend that quote out here. If Professor Robinson were around today, she would be very frustrated with Digital India as well. On the one hand, India is among a small laudable group of countries that recognize the Internet as a fundamental right. But, on the other hand, it also leads the world in Internet shutdowns.

Ravi Shankar Chatuverdi

A small statistic here, in 2018 the country accounted for over two thirds of the total shutdowns recorded worldwide. Nor would Professor Robinson be alone in her frustration, if you think about everything that Internet access enables, if you look at the travails of E-commerce platforms, such as Amazon and Walmart, which have come to realize that regulators in India treat online retailers differently, compared to homegrown online retailers. Despite all kinds of investor enthusiasm, India is a difficult market to interoperate in, and grow a digital business. So, it goes back to this point of, solving for access poverty is merely the first step, there needs to be a tremendous amount of several other dimensions that need to be in place, for us to truly realize any meaningful progress towards the SDGs through digital inclusion.

Shayna Robinson

Thanks so much. Homi.

Homi Kharas

You know, this discussion about economic freedom, I wanted to relate it more broadly to the discussion about poverty. As we think about poverty in general, we do think now about a whole suite of dimensions. Of course, we focus on income poverty, which is the \$1.90 threshold, but many analysts talk about multi-dimensional poverty, and they talk about hunger, they talk about limited access to health and education and equality, and safe drinking water, and modern

electricity, a whole range of things that are thought to be part and parcel of your economic life, in your ability, as Amartya Sen would say, to really develop your economic capabilities.

In that whole discussion, we've not yet had inclusion of the Internet. For me, part of what this is trying to do, is to bring access to the Internet, into that suite of things that is actually necessary in the discussion of economic capability, and to do it in a fashion that is parallel to the way in which we think about all of these other things. In all of these other things we talk about, does this household have access to a certain amount of spending power? Do the children in this household have access to education services? What we've been trying to do here is to drive this now into the Internet, and say, do these households have the potential to access the Internet in the same way?

The really powerful thing here is to take this discussion, which has been a long discussion, an important discussion, about how do we build the digital economy, and link it to how we think about actual human deprivation and our concept of multi-dimensional poverty. Thank you.

Shayna Robinson

Thank you so much, and I think that's a wonderful place to bring our discussion to an end. Again, this research really brings up a lot of questions, and it attempts to answer many questions, and to integrate the idea of Internet access and connectivity as really being an important intervening variable in trying to measure and discuss and define how that intersects with some of the Sustainable Development Goals, and with the discussions around global poverty. I really very much appreciate that, and have very much enjoyed this conversation, and look forward, hopefully, to all the ways that we can continue to expand this research, and to move it forward, because I think it's been really wonderful.

Just in the last few minutes here, I wanted to turn it back over to the World Data Lab team, who could share with us the index itself, which is launching online. It's an interactive tool that you'll be able to use and to go through. Perhaps, Katharina can walk us through that?

Katharina Fenz

Thanks for that, Shayna. Here you can see the interactive tool that is online, right now. If you enter internetpoverty.io you can explore this tool yourself. You see the headline number on top, you can also toggle by gender, it was also one question in the chat here, so you could also click on male or female. Below you can then see, first, a short explanation, and you can then see the actual ranking, and also which countries are on top. You can toggle between the shares of people in Internet poverty, and the absolute numbers, zoom into specific continents, and all of that. I wish you a lot of fun with playing around with it yourselves.

Shayna Robinson

Wonderful, thank you. I wanted to thank all of the panelists and the speakers for this wonderful opportunity to come and share the research, and to delve into it a bit, and to think about the implications of what it's presenting. I want to thank everyone for coming today, for joining us. If you have additional questions or follow ups, I believe there's an email forthcoming to all the participants who registered for the event. Also, please feel free to follow us at the Internet Society Foundation, where we have many other projects that we support, and that we hope to continue to support in the future.

So, thank you all, we very much appreciate it. If nothing else, this session has really highlighted the importance of Internet access and connectivity, and has opened a bunch more questions about what that means and how we do that, and how that impacts so many other factors that contribute to a great life. So, thank you, we very much appreciate it. We'll see you soon.